

THE MOTOR AGE

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BERLIN-AIX LA CHAPELLE RACE

THE MOST MOMENTOUS RACING EVENT YET DECIDED IN GERMANY—WON BY A TRICYCLIST—
OTHER AUTOMOBILE NEWS OF THE GERMAN EMPIRE

Berlin, Sept. 14.—The most important of all motor racing events ever held in Germany has come and gone and resulted most successfully—the Berlin to Aix-la-Chapelle road race. Forty-three entries had been received by the clubs under whose auspices the race was held, the German Automobile Club, Berlin, and the West German Automobile Club of Aix-la-Chapelle. The entries divided up into seven motor-tricycles, twenty-four voitu-
rettes, six cars not exceeding nine-horse-

power, three cars of more than nine-horsepower, and three racing cars. It will be necessary to once more repeat the limit times set for the different divisions: 28 hours for the tricycles, 45 for voitu-
rettes and cars up to nine-horsepower, and 35 hours for cars exceeding nine-horsepower. no restrictions were placed on the racing cars. The start took place at Zoological Gardens of Berlin at 9:10 a. m., on Thursday, August 30, after all the vehicles had been carefully examined and weighed.

Not all of the entrants appeared. The two racing cars were sent off first. They were Beirels in a Wartbury and Kraeitler in a Peugeot. Then the motorcycles and other vehicles were sent off in the order of their time allowance.

Madgeburg was the goal for the first day, a distance of 142.8 kilometers. Gleize on his tricycle was the first to arrive, at 2:53, followed closely by Kraeitler in his racing car at 2:55. Kittsteiner was next on a tricycle, twenty minutes behind. Thirty of the thirty-one starters finished the first stage of the four-day journey.

Tricyclist in the Lead

Friday's route was 153.3 kilometers to Hanover. Twenty-nine men started and twenty-seven reached Brunswick, en route for Hanover. Gleize reached the Brunswick controlling station first and made a stay of five minutes to fill his benzine reservoir. Then followed Kittsteiner, Director Ehrhardt and Barth. An accident happened to Kraeitler further on, but he nevertheless bettered his position and ran into Hanover eleventh. Gleize, the French tricyclist, entered Hanover first in 12:40, midday. Kittsteiner was second at 11:00:29 2-5. He had a ten-minute stoppage on the way, as he ran into a ditch on rounding a corner. Barth, Neuss, Kirchheim, Dasse, Moucet, Ehrhardt, Jeannin, Dupont and Kraeitler followed in order. Of the twenty-seven who were booked at Brunswick twenty-five turned up at Hanover, where the inhabitants of this sport-loving old city gave them a rare reception.

Competitors Drop Out

Only twenty-four men continued on Saturday, when Hanover was left for Muenster, 188 kilometers, and of these Director Ehrhardt had to give up the race, as the axle of his car gave way in Bielefeld, where Gleize was still leading. He was overtaken by Kraeitler on the way to Muenster and had to yield his position to the German, who passed the controllers at 1:19:49, Gleize at 1:29:01. Kirchheim was third, with Kittsteiner, Barth, Dupont and Dasse next.

The number of competitors kept gradually dwindling away till only seventeen cars left Muenster on September 2 to complete the last stage of the journey. Gleize

on his tricycle and Kraeitler in his racing car did battle during the whole remaining 206.2 kilometers, but victory eventually rested with Gleize. The roads were very bad, as it had rained heavily on Saturday and the muddy streets were the cause of a nasty mishap that befell Dasse. His car overturned not far from Muenster and he was thrown out, fracturing his arm.

Gleize Wins the Event

Gleize carried off honors at the finish in Aix-la-Chapelle, arriving fifteen minutes earlier than Kraeitler. His average per hour was fifty kilometers, and he rode the whole distance, 690.3 kilometers, in 14 hours 46 minutes 22 2-5 seconds, the best performance yet made in Germany. Sixteen vehicles signed at Aix-la-Chapelle and the result of the race and times put up in the various divisions is as follows:

Motor-tricycles: Gleize first in 14:46:22 2-5; Kittsteiner second in 17:49:36 3-5; O. Vogel third in 33:28:39 4-5.

Voiturettes: Dupont first in 23:28:19 3-5; R. Jaeger second in 27:49:46 4-5; Barthelmess third in 28:30:41 3-5.

Touring cars, up to nine-horsepower: Kirchheim first in 18:18:08; C. Barth second in 25:19:46 2-5; Dr. Isbert third in 31:39:18.

Touring cars, exceeding nine-horsepower: Durkopp first in 24:56:58.

Racing cars: Kraeitler first in 16:59:24. Beirels retired from the race. A champagne lunch and a banquet at night at which the commanders of the regiment stationed in Aix-la-Chapelle and the chief members of the two promoting clubs were present wound up the race in a most satisfactory manner.

The Emperor as a Chauffeur

The emperor has suddenly discovered that there are different uses for a motor-car than military ones only and drove to the Wilhelmshohe station on August 22 in a very fine four-seater to meet his uncle, the Prince of Wales. On returning from the station some of the gentlemen of the suite used the vehicle. The car has been forwarded to Potsdam, where the court now is, and is reported to be one of the fastest vehicles in Germany, capable of going 95 kilometers (59 miles) in the hour; beautifully uphol-

stered, as it well may be, as the price is 32,000 marks. The name of the maker has not yet been revealed, but it is concluded from the price that it is a French car, as those manufactured in Germany are not so expensive.

The Prince of Wales, Too

The Prince of Wales has been doing a great deal of motoring while at Hamburg von der Hoehe and has spent many an enjoyable hour scouring the Taunus hills. He has also used this mode of locomotion for paying unceremonial visits to his sister, Empress Frederick, whose health has prevented her appearing in public this year to any extent whatever.

Baron von Oberkamp and Comte de Taille, both well known in French automobile circles, have been touring through Germany on their De Dietrich car. From Paris they came to Berlin via Strassburg and Karlsruhe and then worked their way south, taking in Dresden, Frankfort and Munich. Their two valets and luggage are following them from place to place by means of trains.

Uniform Laws for Prussia

Berlin's automobile regulations are being carefully worked out and rough drafts have been forwarded to the heads of various municipal departments. The laws existing in France and Austria were brought into consideration on sketching out the skeleton, and it is presumed that the rules, when they do appear, will satisfy all parties. It is intended to have them sanctioned by the Minister of Public Works, which would confirm them as holding good for the kingdom of Prussia, and do away with the many petty restrictions so dear to the justices and sheriffs of small boroughs and parishes.

Automobile Association Meeting

The first general meeting of the German Automobile Association took place on August 29 and 30 at Berlin in connec-

tion with the start of the Berlin-Aix-la-Chapelle race. All the important clubs in Germany were represented and a luncheon partaken of in the club rooms of the German Automobile Club before driving out to the chief hall of the Zoological Gardens, where the business of the day was opened by an address of welcome by the Duke of Ratibor. General Becker then laid the association reports before the meeting and Dr. Levien opened the discussion by a reference to the motion of the automobile clubs to increase the members of the committee to twenty-four instead of the present thirteen. The motion was unanimously adopted and the committee elected as follows: The Duke of Ratibor, General Becker, Oberbaurath, Klose, Geheimrat, Goldberger, Messieurs Mueller, Herfurth, Barth, Ehrhardt, E. Benz, Kuepper, Pfautsch, Dr. Levin, Kelbel, Eudres, Weber, Schnetzenberger, Dr. Kallmann, Schuette, Hirth, Vischer, Kienle, De Dietrich, Schulze, Dierkoop and Von Thering. Several gentlemen then read papers on various subjects of interest to or appertaining to automobilism and a dinner united the delegates and some invited guests of the club to a very pleasant meal.

Discuss Racing Affairs

Business was resumed on the next day, Thursday, when the council met to discuss the racing regulations, which were accepted after alteration of one or two paragraphs. A jury and racing board were formed, as well as a committee to gather information on the advisability of founding an automobile paper in the interests of the association and the sport. Feeling ran very high on this point, and the pros and cons were entered into with great spirit. The meeting was closed after a board of treasurers, consisting of Messieurs Fritz Friedlounder, Pringsheim and Dr. Levin had been appointed.

HOFFMAN STEAM VEHICLE

The Hoffman Bicycle Co. of Cleveland, which has acquired an enviable reputation among the bicycle trade for building nothing but the highest grade of bicycles, has embarked in the automobile

provements shown in the construction of the machine.

The carriage is described by the Hoffman company as follows: The carriage has 28-inch wheels fitted with 2½-inch



HOFFMAN STEAM VEHICLE.

business and its chief aim in the new line will be to improve if possible the standard of excellence maintained heretofore in the old. An illustration of the new Hoffman vehicle, which is of the steam type, is shown herewith and those of the bicycle trade who have made the rounds of the manufacturers will have no difficulty in recognizing the occupant of the vehicle as L. E. Hoffman, general manager of the company, who by the way, is responsible for a number of im-

pneumatics and when loaded with twenty gallons of water and gasoline sufficient for a 65-mile run, weighs 700 pounds. Equipped with spindle seat and without the top it will weigh fifty pounds less. The boiler is of the fire tube type, wound with piano wire and packed with hair felt. The engine is of the double link type reversible and of 4½ horsepower. The boiler is equipped with a water column with three test gauges in addition to the ordinary water gauge on the out-

side of the carriage. There is a steam gauge and a water gauge on the dash. On one side of the engine is an air storage tank and on the other a muffler. The gasoline is carried under the foot-board. The amount of steam pressure for the carriage is about 140 pounds. The water tank is fitted around the boiler in the back part of the carriage body and carries twenty gallons. The tanks and all piping are of copper. The boiler is tested to 600 pounds cold water pressure and an automatic pump is attached to the engine which will pump more water than the boiler will use. The surplus is carried off by means of a by-pass which when open will allow the pump to force the water back into the reservoir instead of into the boiler. In addition to the pump described, there is a hand pump attached to the regular water line and adjustable so that it may be operated

without getting out of the carriage. By means of this pump the boiler can be filled in about three minutes. The burner of the boiler is started by means of a small alcohol torch; about five minutes are required to get up steam. The carriage is equipped with two powerful Solar lamps. There are two small mirrors on the right side of the carriage, one of them reflects the water glass and the other throws light from the lamp onto the water glass.

The machine is complete in every detail and has been thoroughly tested before being offered to the public. It is capable of making 35 miles on good roads without replenishing the water or gasoline supply and it will climb a thirty percent grade either backward or forward. The price with spindle seat is \$750, and with full leather upholstery, full leather top, Victoria style, as shown in illustration, \$900.

W. K. VANDERBILT, JR.'S, RAPID TRIP

New York, Oct. 1.—William K. Vanderbilt, Jr., arrived here at eleven o'clock last night, having made the journey from Newport in two days in his German Panhard. He had rainy weather and bad roads all the way, but pluckily pushed on to the conclusion of his journey.

His experiences on the way are fully set forth in the following dispatches from various points along the route in to-day's Sun:

From Newport

Newport, Sept. 30.—William K. Vanderbilt, Jr., left for New York yesterday morning in his French automobile, starting at 7:15 o'clock. He started that early in "The White Ghost," intending to make the entire trip by road and hoping to reach New York some time last night and meet Mrs. Vanderbilt at the boat landing in the morning. She left last night by Sound steamer.

Mr. Vanderbilt was obliged to go by the way of Fall River and Providence,

and as soon as he got outside the city limits he speeded up, and at 9 o'clock was in Providence, a very fast run. Although Mr. Vanderbilt wishes to make good time he will not run his machine to its greatest speed, as the roads are new to him and he wishes to meet with no accidents. He was accompanied by his French chauffeur. Mr. and Mrs. Vanderbilt will not return to Newport, having closed their Newport season.

From Providence

Providence, Sept. 30.—W. K. Vanderbilt, Jr., in his racing automobile, and accompanied by his valet and French engineer, touched the Providence city line coming from the town of East Providence on his way from Newport to New York about 9:13 o'clock yesterday morning. He left Newport at 7:15 o'clock, thus making the good forty miles in a trifle less than two hours. The machine and its occupants were covered with dust and the outfit bore indications of having traveled

at a rattling pace over the hilly country roads between this city and Newport. The machine was driven at a rapid pace through the city streets, but its progress was not sufficiently rapid to require police interference. The party attracted but little attention while passing through the city.

Reports from the country, however, are to the effect that the machine went through the several towns as though it was being chased. Few persons who saw it pass were able to distinguish the features of the occupants and it was only on the outskirts of the city that observers were able to tell whether the vehicle contained two or three men. Mr. Vanderbilt was guiding the machine himself when it passed through the city. No stop was made here.

Had a Break-Down

Springfield, Mass., Sept. 30—William K. Vanderbilt, Jr., had a hard time with his automobile in Wilbraham last evening on a trip from Newport to Lenox. His machine broke down and in a drizzling rain. With a companion and an attendant Mr. Vanderbilt had to spend several hours patching up the vehicle. It was his famous racing automobile, but the country roads in Hampden county did not conduce to its speed. Mr. Vanderbilt hoped to reach this city to spend the night, but about 9 o'clock decided to put up at a little country hotel in North Wilbraham. There he occupied a small room, going supperless to bed, but at 6 o'clock this morning sped on his swift career.

He had an adventurous day of it Saturday. In speeding up through the towns of Connecticut he so astonished the natives that the inhabitants of the land of blue laws thought it necessary to arrest the speed with which the vehicle ran through the streets. But they found it quite another matter to carry this resolve into effect. At Stafford the approach of the vehicle was announced by telephone and a large crowd of citizens gathered to greet it.

Passes a Train

Between Stafford and Monson the only incident was a race between the auto-

mobile and a New London northern train. Although the train had a handicap of several miles, it was passed. Everything went well until the automobile neared Monson, and there Mr. Vanderbilt's troubles began. In the first place he missed the road, and, instead of keeping straight on to Palmer, he ascended the heights that lead to Wales. The road was filled with sharp stones, and it was not long before a tire became punctured. That caused a repairing interval of half an hour. When he rode into the sparsely settled village of Wales and inquired for Palmer, Mr. Vanderbilt learned that he had come several miles out of the way. When the inhabitants learned that the proprietor of this rarely seen vehicle was really one of the Vanderbilts they looked at each other in astonishment and exclaimed, "Gosh!" One resident rushed to the only telephone in town and notified Palmer that William K. Vanderbilt, Jr., would be in town in his automobile in a very few minutes. That was enough to bring a crowd.

Pushed into North Wilbraham

After a wild descent from Wales, Mr. Vanderbilt and his companions arrived in front of the Palmer Hotel. Mr. Vanderbilt and his friends quickly went into the house, leaving the attendant to take the automobile to the stable. But they soon reappeared and the machine was brought around. They dashed out of town, and messages by telephone and telegraph announced that they might fly into this city at any moment. It was then 7:30 o'clock, but although they were expected all the evening the automobile did not appear. The landlord of the small hotel, the Mansion House, at North Wilbraham, was putting out the lights preparatory to retiring when he saw three men industriously pushing a disabled automobile up the hill to his house. Mr. Vanderbilt asked for bed and board, but the proprietor expressed sorrow that he could not furnish food, but showed where the automobile could be placed, and then led Mr. Vanderbilt to the bedroom. At 6 o'clock Mr. Vanderbilt was up, and, partaking of a hasty and simple meal, he sped quickly out of town,

dashed through this city, and disappeared toward the Berkshire Hills.

At Greenwich

Greenwich, Conn., Sept. 30.—W. K. Vanderbilt, Jr., went through to-night in his automobile, bound for New York. He was accompanied by his valet, and stopped in front of the Lenox House just long enough to inquire the road to Port Chester, and the distance to New York. Mr. Vanderbilt left New Haven at 2 o'clock and was five hours and twenty minutes in covering the distance of about sixty miles. The roads were heavy from the rain of last night and the auto-

mobile was covered with mud. The roads were pitch dark for an hour before he arrived here.

The Last Stage

Mount Vernon, Sept. 30.—William K. Vanderbilt, Jr., reached Port Chester at 8:15 o'clock. At that time he was going at a thirty-mile clip. He then followed the Boston Post road for New York, passing through Larchmont at 8:45. He did not stop at the Larchmont Yacht Club, as was expected. The police of New Rochelle, who were on the lookout for Mr. Vanderbilt, had seen nothing of him at a late hour to-night.

THE AUTOMOBILE

Did you think that I came from the
hand of man,

That I sprang from a human brain?

Did you think that a genius drew my
plan

And 'stablished my earthly reign?

The genii back of the ancient night

Were sponsors upon my birth,

And I was born of the wings of light

For a wingless course on earth.

In city street or in country lane

They hover when I go by

They draw my life from the bolted chain,

From mastered flame of the sky;

The bolts and rivets and bars and wheels

May labor and rock and roar,

But the will of the genii through me
steals

And the leagues behind me soar!

I am a dream of the things men thought

When the high gods walked the world,

When Hercules at his labors wrought

And the bolts of the anvils hurled

Their song of might in the morning light

Of the dawning strength of man,

And the seas were poured from left to
right,

And the earliest rivers ran!

I slept an age in the beaming sun,

I rocked in the ocean's lap,

I followed the path that the lightnings
run,

I laid for eons to nap

On the breast of the wind of the whirling
spheres;

In the molten cradles I lay—

A babe of the immemorial years

Born out of the Past for Today.

I am one with the wind of the surging
storm,

And one with the summer calm;

I yield my will to the powers that form

My speed to a woman's hand;

A child may master by levered force,

As docile and meek I smile

At the ancient shadow they called a horse,

And cherished for speed and style!

But ever the breath of the blast is mine,

And my veins are bolts of flame;

Unseen, they follow with eyes that shine,

That genii from whence I came—

The gnomes of the air and the eerie souls

That breathed on the brain of man

And gave him the key to the force that
rolls

Through the artifice of my plan.

Wingless, yet winged with the ancient
dream,

Fired with the ancient fire,
I come from the bourne of the lightning's
beam

At the call of the new desire!
I type the progress of force and thought,
The need of the later time,
Whose arch is based where the high gods
wrought

In the flush of their potent prime.

Born with the dream, that may yet come
true,

Of ships with the speed of light
Sailing the seas of the central blue
To ports of the starry night,
I take the road or the crowded street,
The hill or the level plain,
I, and the genii who follow fleet,
In the pride of our earthly reign!

—Baltimore News.

FAIRMOUNT PARK NOW OPEN

Philadelphia, Oct. 1.—"Everlastingly sticking to it" has brought about the desired result and the Quaker chauffeur may now roam at will through Fairmount Park without fear of being "called down" by the gray-garbed minions of the law or "hailed up" before a magistrate. There are two exceptions, however to this general use of the Park roads by automobilists, and they are the West River and the Wissahickon Drives. The former, between Grand Avenue Bridge and the Falls of Schuylkill, will at the next session of the Councils in all probability be set apart for a speedway for drivers of fast horses; the latter is so narrow, for the most part being cut out through overhanging rocks and steep hills, and being throughout its length decidedly tortuous, that the presence of automobiles there might work injury to drivers and their horses, and even to automobilists themselves.

It is a great victory and the autofans get about all they contended for. There was a bare quorum present when the committee on superintendence and police took up the matter, and there was very little preliminary talking done. The resolution was not passed, however, until an amendment was introduced and passed requiring all automobilists who enter the Park after October 15 to carry at the rear of their vehicles small blocks with white figures painted on a black background, large enough to be distinguished at some

distance and so arranged that they may be removed when the owner is navigating his machine elsewhere. These numbers will be furnished gratis by the city. This rule was made as a concession to the opponents of the resolution, who insisted that some means should be adopted to apprehend automobilists who may fracture the park rules, a few instances of reckless driving being brought before the committee in order to influence its action. Apropos of reckless auto driving, it is proper here to state that, in not a few instances recently, some of the hare-brained and callow motorists—recent additions to the rapidly growing local contingent—have given just cause for the introduction of restrictive legislation. The officials of the Pennsylvania Automobile Club have taken cognizance of the matter, and will shortly pass a set of resolutions in which they will offer every possible aid in their power to put a stop to the practice, a continuance of which cannot but result in the curtailment of the privileges of the law-abiding majority. It is a well-known fact that the police have been specially instructed to apprehend all reckless auto drivers.

The news of the passage of the "wide-open park" ordinance was received with joy by the local tradesmen, who foresee, as a direct result thereof, a measurable increase in the number of automobile

owners here. It is asserted also that a number of local bicycle dealers who contemplated embarking in the automobile business, but who have been holding off owing to the anti-auto park rules, will now go ahead and take the necessary steps to arrange their establishments for the sale and repair of various types of self-propelled vehicles.

PARK AUTO BUSES

Cleveland, Ohio, Oct. 1.—A local company headed by H. H. Hammond and A. W. Oppman have made a proposition to the city park board asking for a franchise to operate automobile busses in the city parks and boulevards. They agree to make a round trip rate of ten cents for the entire boulevard system and to pay the park board ten percent of their gross proceeds. The majority of the park board are in favor of granting the franchise as there is at present no public means of conveyance over the boulevard system. The matter will be decided at a meeting next week.

AUTOMOBILE NOT A NUISANCE

Dr. William L. Vroom of Ridgewood, N. J., the owner of a steam motor-vehicle, was sued for damages by the husband of a woman who received injuries from which she died, by the running away of a horse which she was driving. The horse, it was alleged, took fright at Dr. Vroom's auto. In charging the jury, the judge said:

"The first question to which you come for the purpose of deciding the defendant's responsibility is whether this machine was a nuisance. You have seen how it was operated. You have heard the witness describe the mode of operation, and the question rests with your sound judgment as to whether the machine, driving along the country roads without a horse in front and discharging steam behind, is likely to frighten a horse on the highway, and thus endanger the road as to constitute the machine a nuisance. It is agreed that it is an improved method of locomotion, but it does not follow from that that it is to

be tolerated. The right to drive horses along the highway is an established right, a common right, and if a modern method of locomotion is used of such a nature that it commonly brings discomfort and danger to those exercising the common right, the established right of travel on the highway, then it is a nuisance and cannot be tolerated. If it occasionally or exceptionally frightens horses that would not make it a nuisance. In order to make it a nuisance its common effect must substantially interfere with the people who drive horses along the highway."

The jury, who had witnessed an exhibition of control by the doctor, promptly decided that the automobile was not a nuisance.

MOTOR-VEHICLES GO FREE

The Syracuse Telegram says: The almost universal use of the automobile has given rise to many different questions regarding their rights. The controversy over their admittance to Central park in New York is well remembered. Almost every day one hears of a runaway resulting from a rapidly moving motor carriage, and all sorts of suits are threatened.

An entirely new question has now come up. It is whether or not automobiles shall pay toll on country roads. As everyone knows, the sign at the toll-gate says distinctly that the charge shall be according to the number of horses. The size or character of the wagon makes no difference. So the automobile goes free.

But this does not satisfy the owners of the turnpike roads who do not fancy allowing any wear or tear on their property that is not paid for, and it is probable that some new rule governing automobiles will soon be formulated.

In the Lakeside boulevard a charge is made for bicycles, but it is the only toll road in this vicinity on which they have to pay.

The question of charging for automobiles was tested on the Cicero plank road and after some discussion the toll-gate keepers found that they were

obliged to let the vehicles pass without charge.

THE AUTOMOBILE IN TOWN

New York is so deeply interested in the problem of freeing its streets from animal traction that each new development of the automobile question is important, says the New York World, editorially. When the Chief of the Fire Department abandons the automobile for daylight use and returns to his buggy it looks like a setback for automobilism.

But this impression is not borne out by the facts of the case. The Chief had a couple of very narrow escapes from collision in his automobile, but if he had been in his buggy and making the same time he would inevitably have come to grief. A horse drawing a buggy can neither be speeded nor checked nor turned as quickly and as accurately as an automobile.

The tests for the new motor are being made every day on the streets, and they are increasing in number with the return of the automobilists to the city. The progress of automobilism during the present year has been marked, and one improvement in which the public is interested is the great improvement in the brake. To the man on the street the stopping of an automobile is more important than its speeding, but both speed and safety seem to be on the side of the machine as against the horse.

FROM AN EXCHANGE

"I don't suppose these automobiles worry you much," said the city man.

"Waal, no," drawled the loungeer at the cross roads store. "I reckon we'll find somethin' else to pitch quoits with when horseshoes begin to get skeerce."

ADVANTAGES OF THE MOTOR-VEHICLE

It has been gradually recognized that an enormous field exists for a form of transport intermediate between horse haulage and railway, which, while independent of fixed routes, should possess greater latitude and show economy superior to that of the horse, says Fred W. Maynard in The Engineering Magazine.

The traction engine partially fulfills these conditions, but the one great objection to its employment is that its full economy can be secured only when, comparatively speaking, very heavy loads are dealt with. This objection, however, does not hold good with the auto-wagon, which provides just that rapid and cheap form of independent direct transport for which so great a need exists at the present day. Apart from the pecuniary saving, the benefits following in the train of the general adoption of motor traction cannot be overestimated. The incalculable boon of cleaner streets, in point of view of the public health, should rank almost before economy, for it has long been a well recognized fact among medical men that many epidemics, and also that fatal disease, tetanus, are in a very large measure due to the air of our streets forming a medium of suspension for germs which originally find a breeding bed in the predominating portion of the dirt caused by horse traffic in dry weather. But with cleaner streets the cost of scavenging will be enormously reduced, and, owing to the absence of that pulverizing action of the horses' hoofs, a corresponding saving in the expenditure for maintenance and repairs of the road surfaces will be the natural result.

THE COST OF RAPIDITY

A writer in the Outlook has been studying the statistics of street casualties in New York. He finds that in 1889 there were 155 deaths caused by vehicles in New York, but in 1899 there were 235 deaths from the same cause. The entire increase is not due to the new and more rapid means of locomotion, but seventy-five of the deaths were caused by trolley or cable cars, bicycles or automobiles. Whence the conclusion is based that "the newer and quicker method is not safer."

That the increase of speed in the streets is attended with some hazard has always been indisputable. But these statistics really tend to minimize the estimate of that danger. For if we take the increase of population into consideration the increase in loss of life is inconsiderable, compared to the great gain in the lives of the millions by the increased opportuni-

ties afforded by more rapid transit. Moreover, the statistics show another curious fact. The slow-moving trucks and wagons of New York City killed 105 people in 1899, or forty percent more than the fatalities from electric and cable cars, bicycles and automobiles combined.

The statistics, therefore, fail to make good the indictment against the swifter vehicles.

AUTO REGULATIONS IN CHEMNITZ

Vice-Consul Monaghan forwards the following regulations covering the running of automobiles in Chemnitz:

(1) Persons under fifteen years of age and persons who have no knowledge as to the management of such machines shall not be intrusted with the running of automobiles.

(2) All persons who do not give their undivided attention to the management of automobiles, or who while using the same fall asleep or get intoxicated, are liable to punishment.

(3) The signal to turn shall be "Heeh." The use of signal horns will be permitted until further notice.

(4) Every automobile must carry at least one very good lantern; the same shall be lighted at the same time as the street lights.

(5) The speed of automobiles in the city shall not be faster than that of an ordinary trotting horse.

No one shall run an automobile faster than a horse walks—

(a) On leaving buildings or sheds bordering on the street.

(b) During church services in the neighborhood of churches.

(d) In places where there is large foot traffic.

(e) In places where fast driving is forbidden.

(6) Automobiles shall not be left unattended on the street.

Any one disobeying these rules shall be punished.

A NARROW ESCAPE

On Thursday last Ambrose H. Rauch, the pioneer automobilist in Bethlehem,

Pa., had a narrow escape from instant death. In descending New Street Hill, which is very steep at that point, his brake refused to work and the machine got away from him. Realizing that the vehicle was beyond his control, and seeing that a Jersey Central train was slowly passing at the bottom of the hill, he managed to turn the front wheels into the ditch when within a few feet of the cars. The wheels were twisted into a mass of tangled wire, but the vehicle was otherwise unhurt. Mr. Rauch, who is 83 years old, escaped by a miracle.

IN THE AUTO

I take my sweet for a quiet ride
In an automobile for two,
And on through the lonely lanes we glide
As lovers are prone to do.
No lines to bother, no horse to fret
And lessen the evening's zest;
The lever, obedient, stays where set—
And we can perform the rest.

When far from home we are,
In case our vehicle snug should balk,
Don't think we'd have to get out and
walk,

Or wait for a cable car;
Her lips on mine in a long, long kiss,
And no one near to tell,
Would thrill me so with electric bliss,
"Twould start the machine as well!
—Edwin L. Sabin, in the Smart Set.

NOTES OF INTEREST

Automobiles are proving great attractions at country fairs this fall.

A novel race was run at Ostend. Motor-vehicles were driven on a grass track.

The proposed motor-vehicle races at the Atlanta, Ga., fair, have been abandoned.

The international race at Paris is reported in a newspaper of Manila, called Freedom.

The Popular Science Monthly for September contains an article on "Electric Automobiles" by William Baxter, Jr.

The village trustees of Hempstead, Long Island, have raised the speed limit of motor-vehicles from six miles an hour to ten.

The fascination of the automobile is illustrated in the case of six New York boys who robbed a jewelry store for the

purpose of raising funds with which to buy a horseless carriage.

F. V. Eastman of Benton Harbor, Mich., recently completed a 325-mile trip in his Locomobile.

Lady Francis Hope, better known in America as May Yohe, an erstwhile popular soubrette, is a devotee of the auto.

Daytonia, Fla., one of the popular winter resorts, has granted a license to operate an automobile line through that town.

Motor-vehicles are proving great drawing cards at county fairs this fall. More than one enterprising owner of a vehicle has paid for it by exhibiting at fairs.

Butler Ames of Lowell, Mass., a republican candidate for congress, who has offended his party machine, is making an active canvass of his district per automobile.

An enterprising firm at Findley, Ohio, has purchased an automobile for its field manager to use in his trips to the various oil wells where the company does business.

A second individual believes that an automobile route on the Yukon river is feasible. E. H. Clear is the promoter of a company to institute a regular service on the Klondike river.

A New York magistrate has decided that automobile drivers having vehicles whose motors develop less than ten-horse power, are not subject to the necessity of securing engineers' licenses.

Kansas City has decreed that all vehicles are to be taxed. The amount of the yearly impost ranges from \$1 for bicycles up to \$15 for four-horse vehicles. Automobiles are assessed at \$5.

William Jennings Bryan is a convert to the automobile. In Nebraska he has spent some time in travelling from town to town in a horseless carriage—for the purpose, of course, of making speeches at the various stops.

The New England Fire Insurance Exchange has adopted the following rule: "When permit for keeping not more than three automobiles using gasoline for fuel or power is attached to policies, a charge of ten cents per \$100 must be made. When more than three are to be kept,

the risk must be considered a special hazard, and be specifically rated by the local committee having jurisdiction."

At an automobile congress recently held at Padua, a "tour of Italy" was planned to be held April next. The distance covered will be 3,100 miles. The plan is similar to that of the recent 1,000 miles trial in Great Britain.

George Brauks, a stationary engineer of St. Louis, caught the automobile fever and decided that he must have a vehicle for his own use. So he devoted his evenings to the designing and building of a vehicle which cost him in materials \$250, and in the labor four months.

Grand Rapids, Mich., solons are considering the advisability of passing an ordinance limiting the speed of motor-vehicles in that city of lax morality. If they would adopt some means to prevent their women being so fast they would confer a greater boon on their constituencies.

Several daily newspapers have discussed the price of automobiles with more or less intelligence. Some think prices too high, but one has fairly compared the prices of bicycles in the early days with those of the automobiles today and decides that it not only costs proportionately less to buy an auto now than it did a bicycle then, but, compared with the prices of horse drawn carriages, the prices of motor-vehicles are far from excessive.

After much laborious thought a citizen of Liberty county, Georgia, has evolved a somewhat startling and certainly novel theory to account for the many prostrations by heat during the last summer in Chicago and other large cities. "It's the pneumatic tires," he says. "I notice that everybody is riding on pneumatic-tired bicycles or in pneumatic-tired automobiles or pneumatic-tired carriages. Well, they've got to pump atmosphere into those tires, haven't they? I believe that they have put so much of it into the tires that there is not enough left to go round among the people, and that's why they fall down and die when it gets real hot."

THE FIRST AUTOMOBILE IN BUNGTOWN



CONSTRUCTION OF A MOTOR VEHICLE

THE PRACTICAL CONSTRUCTION OF A MOTOR VEHICLE ADAPTED TO BE USED IN CONNECTION
WITH THE FOUR-HORSEPOWER GASOLENE MOTOR ALREADY
DESCRIBED IN THE MOTOR AGE

BY L. ELLIOTT BROOKES

[The series of articles by Mr. Brookes, describing a four-horsepower, two-cylinder balanced, gasoline motor for automobile use, met with such general commendation as to insure the success of the present series of articles which will describe, with equal care, the construction of everything else that goes to make up the complete motor-vehicle. It is impossible to furnish the back numbers containing the series of articles describing the motor, but they have been published in book form at a popular price by The Motor Age from whom full size blue prints can also be obtained. Further announcement will be found in the advertising pages.]

PART I.

The vehicle about to be described and illustrated by complete working drawings, is of a type of construction somewhat different from that of any American make that the writer has seen. The whole of the mechanism, including the water and gasoline tanks, with the exception of the controlling levers and fast speed foot lever, are carried upon a frame composed of standard structural shapes, such as channel, angle and rectangular sections, riveted together. This frame is, in turn, supported at two points on the rear axle near the driving wheels, and on the front axle at one point, viz., the center of the axle, so that the frame has a three-point bearing, and no strain can be put on the driving mechanism or distortion of the frame occur, in this construction, from the raising or lowering of the wheels, while traveling on uneven roads, or passing over obstacles.

A vehicle of this kind has been built by the writer, operated by a motor of the type previously described and illustrated in the "Construction of a Gasolene Motor," and has been tested upon good, bad and indifferent roads, and has given excellent satisfaction, both in ease of riding, simplicity of controlling the operating mechanism and steadiness in running, at both slow and fast speeds. No vibration whatever is felt by the occupants of the vehicle from the operation of the motor, even when the vehicle is standing with motor running. The entire mechanism of the vehicle is easily accessible, as will be seen from the drawings. This is a point which the writer has found, from handling other types of ve-

hicles, to be very necessary. The body is carried upon springs supported upon the front and rear axles, and is entirely independent of the machinery, and can be readily and quickly taken off by removing the bolts which secure it to the front and rear springs, and disconnecting the controlling levers and fast speed foot lever, by the simple process of withdrawing four small bolts.

The motor is located, as shown, in the rear of the frame, and at right angles to the direction of travel of the vehicle. By simply opening the doors in the rear of the body, the ignition mechanism, spark plugs, carbureter, lubricators and valves are immediately accessible for inspection or adjustment. The water and gasoline tanks can be got at very readily by removing the cover in the seat, under the cushion, as shown. A cover having a brass wire screen in it is provided in the top of the rear portion of the body, and the operation of the motor and its concomitant working parts can be readily seen through the screen. By removing the cover and opening the end doors, every part of the motor can be got at and the cylinder and transmission gearing lubricators filled and all other working parts oiled, scarcely soiling the fingers.

No overalls or jumper need be worn when getting this vehicle into shape for a run. These are points which the writer has found to be of inestimable value in the designing of a gasoline motor-vehicle.

Ample space is provided in the box in front of the body, which forms the dash, for battery, induction coils, tools, and also for carrying an extra supply of gas-



FIG. 1-PERSPECTIVE VIEW.

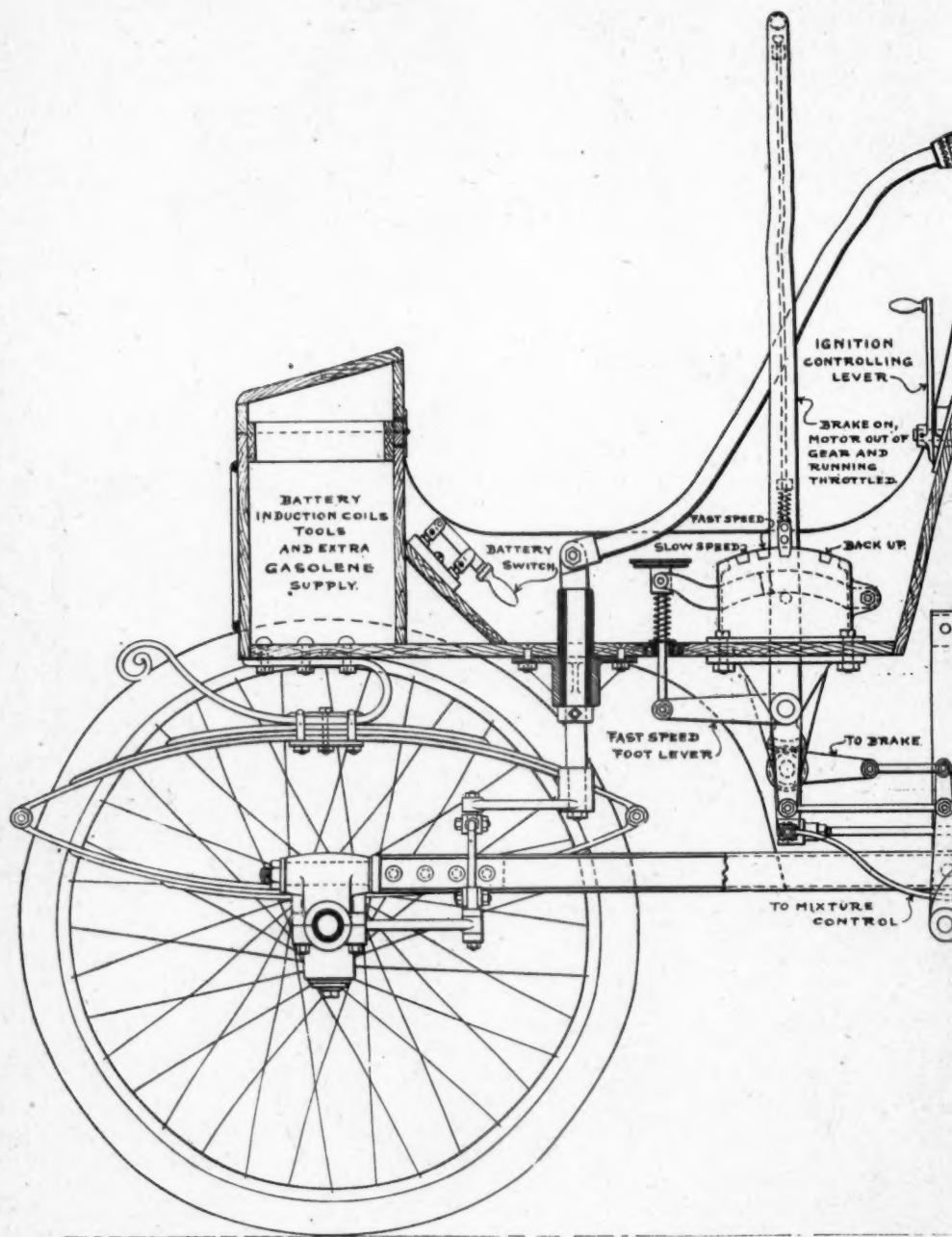
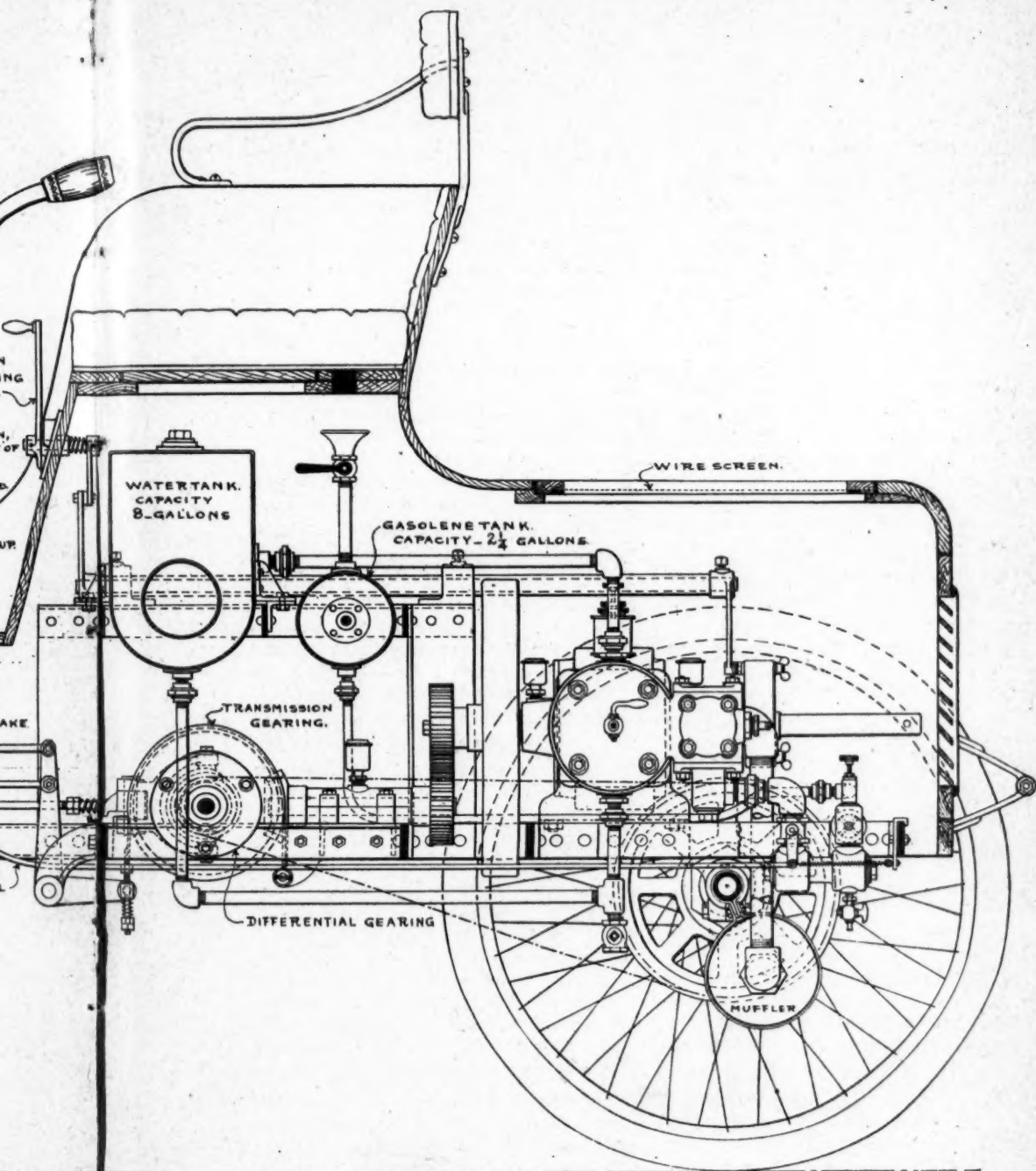


FIG. 2.—SIDE



SIDE SECTIONAL ELEVATION.

olene if so desired. The lever controlling the slow speeds forward and back and the foot lever for operating the fast speed are on the left-hand side of the vehicle, and the steering lever and ignition timing lever in the center, in front of the seat. This method of operating the vehicle has been found preferable by the writer to having the hand and foot controlling levers on the right-hand side, or to having them in the center, as in other types of vehicles, with the steering lever on the extreme right, or nearly so. Nearly every person can use the right hand better than the left, and if one is going at a pretty fair rate of speed and has to turn suddenly to avoid an accident to himself or someone else, he will find, as the writer has on several occasions, that he will need all the strength his right hand possesses to turn the vehicle suddenly in one direction or the other and then bring it back again into its former course in a distance of, say, not more than four or five times its own length.

Fig. 1 shows a perspective view of the carriage and gives an excellent idea of its general appearance. Fig. 2 is a side sectional elevation of the vehicle, showing plainly the internal mechanism, which is almost entirely covered by the body, which is shown in its lowest position, as if loaded. The arrangement of the steering lever and its connections to the spindles of the front wheel hubs, the swivel connection between the frame and the front axle are shown, as well as the controlling lever for the slow speeds, forward and back, and the foot lever for operating the fast speed.

When the controlling lever is in the position shown, the transmission mechanism is out of gear with the secondary shaft, which carries the differential gears and the driving sprocket wheels, and the brake is set. If held in either position backwards or forwards, half way between the center and end notches in the quadrant, the brake is off and the motor running with the transmission mechanism still out of gear with the secondary shaft. By varying this position slightly the vehicle may be let down an incline either backwards or forwards, an inch at a time if necessary, without any danger of running away, as the slightest movement of

the controlling lever from either side to the center instantly applies the brake band to the brake wheel, which is located upon the transmission shaft. The fast speed is operated or brought into action by moving the controlling lever forward to the first notch, from the center, when the foot lever can be pushed down, thus gradually bringing the fast speed mechanism into action; this foot lever can be applied when the controlling lever is in the right position, but at no other point. It remains locked when the controlling lever is in any position except the right one, and there is no danger of trying to make the vehicle operate with the fast and slow speed gears both in action at the same time, as can be done with many types of controlling mechanism that the writer has examined.

The transmission device consists, primarily, of three bevel gears, one connected to the motor and engaging with the other two, which are located upon the transmission shaft. These two bevel gears each has the female part of a cone clutch within its periphery, which can alternately be engaged with a double ended, leather faced male cone clutch, also located upon the transmission shaft, and between these two gears. This constitutes the forward and back slow speeds.

The fast speed is actuated by means of an internal gear, which, when not brought into use, runs idle upon its own bearing, which surrounds the transmission shaft and forms part of one of the transmission shaft bearing brackets. The internal gear has a brake wheel on its outer surface, around which is a leather faced steel brake band, which is connected by the operating mechanism, as shown, to the fast speed foot lever. Upon the back bevel gear upon the left-hand side of the transmission shaft, three pinions are located equi-distant from each other, and meshing with the internal gear and also with a spur gear which is keyed fast to the transmission shaft. Under normal conditions, when not in use, the internal gear rotates idle on its bearing, but when the brake band is gradually applied through the medium of the foot lever, the fast speed becomes operative, as the pinions attached to the left-hand bevel gear are caused to rotate upon their axes

and drive the spur gear, which is keyed to the transmission shaft, by means of the retardation of the rotation of the internal gear. In this manner the fast speed can be obtained gradually, without shock or jar, or any danger of breaking the teeth in the gears, a misfortune which

secondary shaft. It has attached upon its left-hand, outer end, the casing of the differential gear, and the brake wheel upon its other, or right hand end.

This transmission device is about as compact in form as it is possible to get and still obtain two speeds forward and

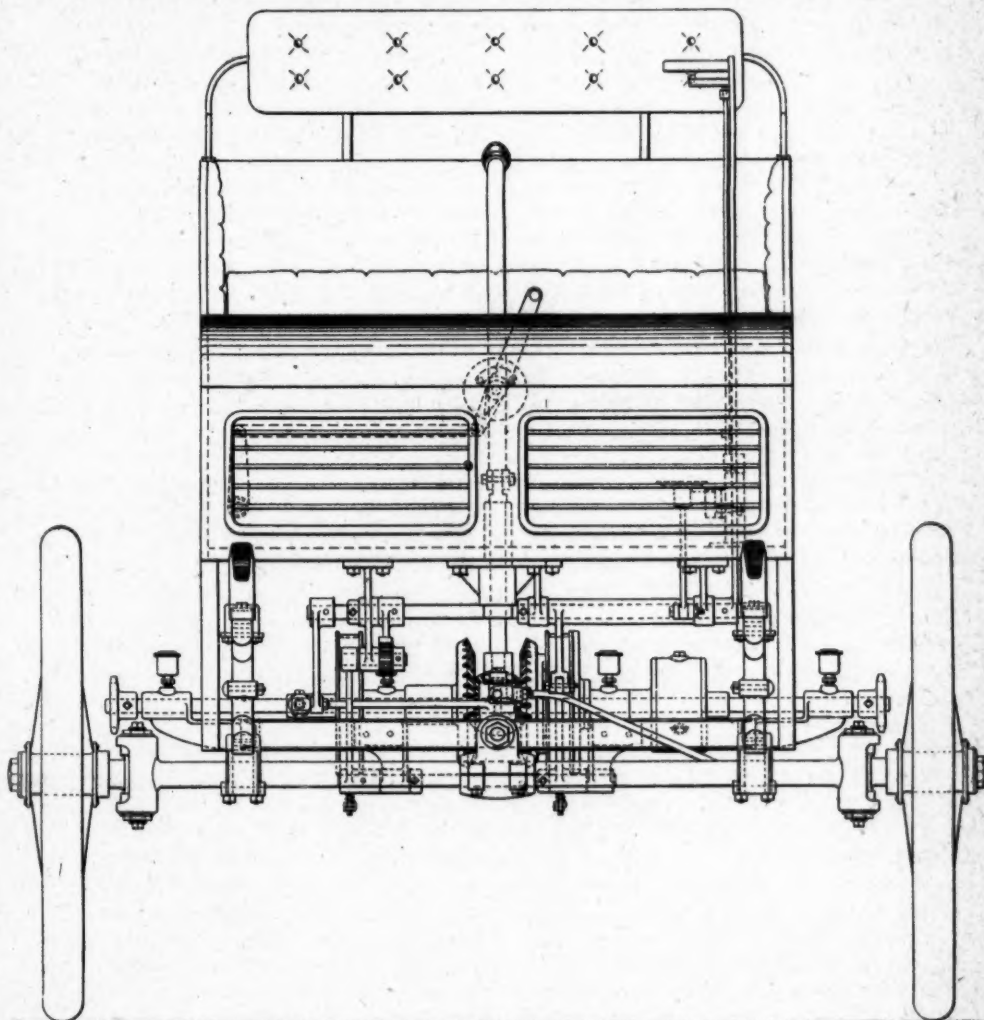


FIG. 3.—FRONT ELEVATION.

is of common occurrence with speed changing devices which attain their end by sliding spur gears upon one shaft into and out of mesh with spur gears upon another shaft, or throwing them in and out of gear in a similar manner to the action of a back gear upon a lathe.

The transmission shaft consists of a hollow sleeve through which passes the

one backward, with also the differential gear and a brake wheel. These are all carried on a single shaft and occupying a space of about 23 inches in length by $8\frac{1}{2}$ inches outside diameter. The gearing comprising this transmission consists of one internal gear, three pinions, one spur gear and three bevel gears.

The motor is shown operating the

transmission mechanism through an auxiliary shaft by means of two spur gears of equal diameter. This the writer has found to give better results than driving the transmission mechanism directly from the motor, for the reasons, first, that it gives what may be called a flexible

The gasoline and water tanks are carried in a rectangular frame, which is practically part of the main frame, and, consequently, no flexible connections are needed between the gasoline and water tanks and the motor—and these flexible connections are decidedly undesirable, as

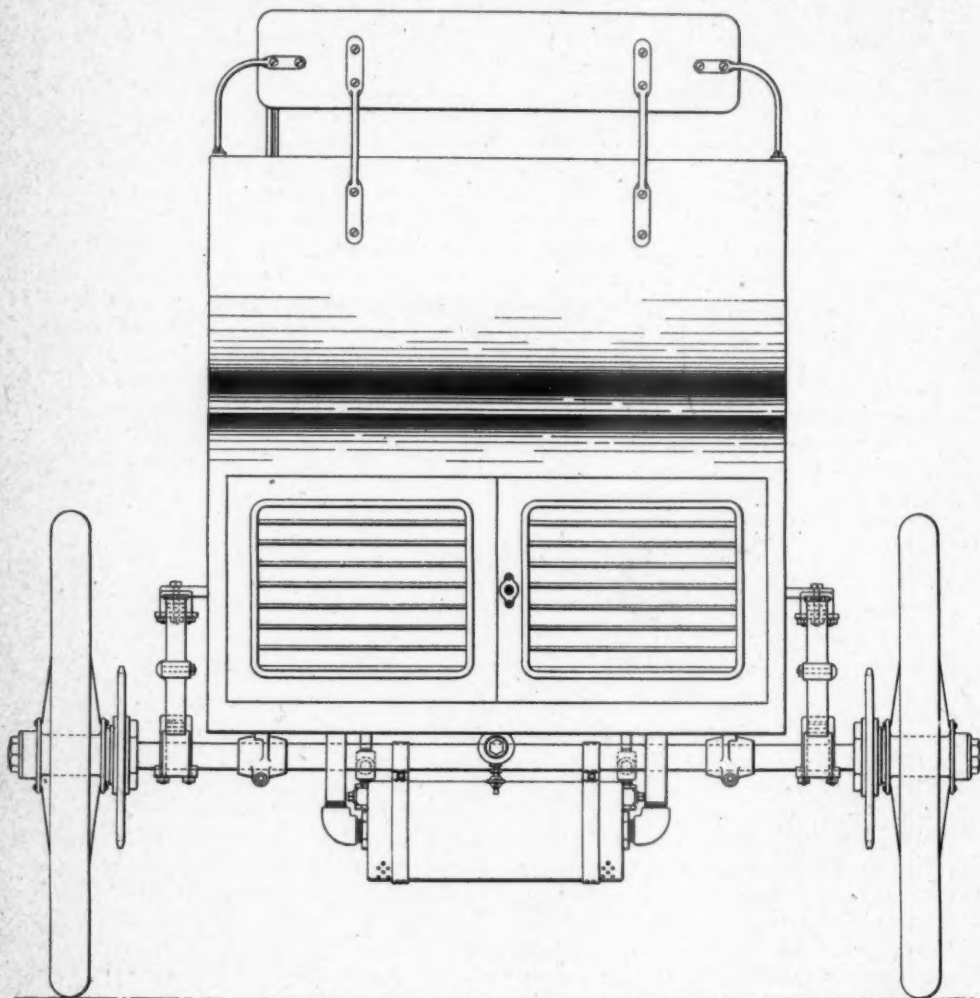


FIG 4.—REAR ELEVATION.

connection between the motor and the transmission mechanism, and prevents any binding of the bevel gearing through any possible spring or deflection of the frame; second, it brings the center of gravity of the load lower down; and, thirdly, it gives an almost horizontal pull on the working side of the chains, which is very desirable.

the writer has found from experience.

The water tank is connected to the water jackets of the cylinder by means of two sets of pipes, as shown, using the natural water circulating system; this uses a little more water than the non-circulating system shown in Fig. 88 of the article on the "Construction of a Gasoline Motor," but is more to be desired

than the other form, on account of the better connections which can be made with the type of vehicle construction now under discussion, allowing the water tank to be placed much lower than with the other system, and consequently the seat of the vehicle. Of course if the vehicle were to be used where water is a scarce commodity, then the non-circulating system could be used by elevating the water tank to the proper height to make the connection as shown in the before mentioned Fig. 88, and raising the seat lines accordingly.

The carbureter is connected up as shown in Fig. 88, referred to, with the exception that the globe angle valve and the vertical check valve are swung around to the right-hand side of the motor, so as to keep the frame, which carries the machinery, as short as possible, and also to make the globe angle valve hand-wheel more accessible. The gasoline pipe is carried down from the tank and passes under the right hand cylinder of the motor, and connects to the needle valve by a union and right angle bend, as shown.

The ignition timing lever in the center of the seat is held securely in any position in which it may be placed, by means of the coiled spring shown in the rear of the front portion of the seat, behind the dial plate, which can be graduated for different points of ignition, if so desired, and connects to the ignition cases through the medium of a shaft, carried in a tube or sleeve to the rear of the vehicle.

The muffler is suspended by its connection pipes, slightly in the rear of and below the rear axle, to which it is secured, to prevent vibration, by means of two bands, as shown.

The rear wheels are each driven independently from the secondary shaft by chains, as shown, the differential gearing being carried by this shaft, thus doing away with the use of a split rear axle, and enabling a very small and light differential gear to be used.

Fig. 3 gives a front elevation of the vehicle, which shows clearly the connections of the frame, steering device and springs to the front axle. The control-

ling lever shaft and its connections are shown as well as the transmission mechanism and secondary shaft, and a front view of the controlling and steering levers, fast speed foot lever and ignition timing device. While in this view the machinery may seem exposed, such is not the case with the actual vehicle. If one wishes to get a look at the transmission mechanism, which shows so plainly in this view, he will have to get down on his hands and knees close up to the front axle, and then he will be disappointed, unless the doors in the rear of the body are opened and the cover in the seat removed, to let in some daylight. As the vehicle stands, which the writer has constructed on these lines, the machinery is about as well covered up from any point of view as in any vehicle he has seen, as shown in Fig. 1, and yet it is perfectly accessible. This has been a problem to solve which the writer has lost a great deal of sleep and spent a great deal of time. It is one thing to box in the machinery in a gasoline motor-vehicle and another thing to box it in, and, at the same time, to locate it so as to be accessible from all sides.

Fig. 4 is a rear view of the vehicle, showing the rear axle, the sprockets on the driving wheels, the muffler and the connections between the body, springs and frame and the rear axle.

The writer has endeavored in these two views of the front and rear elevations of the vehicle to eliminate everything that would tend to make complications in the drawings, and in this manner to avoid all confusion between mechanisms pertaining respectively to the front and rear portions of the vehicle. Mechanics who have had much to do with shop drawings of assembled machinery will appreciate the writer's efforts in this direction.

Further, the evolution of the type of motor previously described and the vehicle now under consideration has cost the writer over three years of hard work in experimenting, and if any readers of these articles can gain any information that will be of use to them in this line the writer will feel well repaid.

THE AMPHIBIOUS GASOLENE MOTOR

MARINE MOTOR MANUFACTURE AND OBSERVATIONS OF THIS INDUSTRY POINTING TO THE
NEED OF BETTER RUNNING GEAR FOR AUTOMOBILES.
BY M. C. KRARUP

Nearly all the factories in the United States where gasoline engines are made for stationary power purposes are working overtime to fill orders and many of them are being enlarged to meet the increased demand. Most of the establishments where gasoline motors for marine work are made are also behind in their orders and many of their customers have been disappointed for the present season and have deferred their hopes till next spring. This is especially the case with those who are particular about the kind of motor they want, or in other words the experienced ones who have been bitten once by getting motors that were more productive of trouble than of power.

Demand for Marine Engines

Every builder of launches, sailboats and even row boats is fully aware that his business is susceptible of rapid enlargement whenever it shall be possible to get the right kind of motor delivered whenever wanted. The right kind of motor means to the boat builders and their patrons one that does not get tricky under rough handling, can stand bilge water, salt as well as fresh, and whose power may be graduated to varying loads and speeds. It must also be compact, and safe against explosions.

Appreciate Value of Motors

Having been permitted to scrutinize the correspondence of a concern which makes a motor filling these requirements uncommonly well, but which is quite unable to keep up with orders, I can safely state that the public is thoroughly awake to the convenience and economy of the gasoline motor for small marine craft and that there is a widespread and not over-fastidious demand for such motors, checked and held in leash at the present moment only by uncertainty on the part

of the public in regard to the relative merits of the various motors on the market and by the limited capacity of the manufacturing concerns.

Attractive to Capital

This situation would seem to invite more competition and more capital to the manufacture of stationary and marine engines; and there have indeed been several notable additions to the ranks of the industry during the past year, besides the all-around increase in capacity; but there is one very wholesome conservative factor which may well make the capitalist think twice before he invests his money in the competition. This is the supreme importance of the motor's quality and fitness for its work. While promptness in filling orders undoubtedly attracts a great deal of business and will continue to do so and while a well-established name draws custom in this industry, as in any other, the public are fast gaining experience and insist more and more on getting the best there is. Their patience in waiting for the motor, that, in their judgment, has been proved reliable, is marvelous. Their willingness to advance money, if necessary, in order to hasten its delivery, is little short of miraculous.

Many Imperfect Motors

And, indeed, this attitude of the public goes to prove—if any doubt exists on this point—that the majority of motors still give more or less trouble. People are not so patient for the sake of mere degrees in efficiency. The differences between the various makes, especially for marine work, mean a great deal more to the users than the various theories underlying the construction meant to the designers. They spell disgust in one case, delight in another; never-ending expense to one, economy and daily profit to another; incumbrance, worry and dis-

appointment hardly less often than contentment over a new luxury.

While there are gasolene engines that give satisfaction, the theory of the engine is not yet generally recognized. There is not yet anything tangible that could be called gasolene engine practice in the same meaning in which one speaks of steam engine practice. The type of the internal combustion motor in general is not yet fixed, much less differentiated for different kinds of marine or stationary work.

Great Future Demand

Herein, and herein alone, lies the protection of the industry against a "boom" like that which swept the cycle industry as soon as fixity of pattern had been reached. The same stage will be reached for the marine motor the moment the engineering world at large recognizes on what point or points in gasolene engine construction and design the one indispensable quality of every working engine, viz: reliability, absolutely depends. And then—the present attitude of the public warrants the assertion—orders for gasolene motors in sizes from one to thirty horsepower will crowd in upon the makers thick and fast from boat builders and boat owners at every harbor, inland lake and navigable river in the United States—from fishermen and pilots—from the Bermudas, Cuba, and the West Indian Archipelago, Samoa, the Sandwich Islands and the Philippines. The prospective business is big enough to satisfy Colonel Sellers and safe enough to invite the closest attention of investors.

No Monopolistic Patents

No Selden patent bugaboo threatens the prospect, but there is no denying that possibly other patents, covering those construction features upon which reliability of the motor hinges, may control the situation for a while.

This makes the present period momentous in the extreme from the financial standpoint, and well suited for studious inquiry; for there are already types of marine motors in existence which approach the ideal so closely that the victorious principle, if perhaps it may not

be found in a single motor or the patents covering its production, may certainly be ferreted out by a close and expert comparison of a few among the best patterns.

A Critical Period

To the automobile engineer who believes in the gasolene motor, this critical period in the development of marine motors, should be of intense interest for the light it sheds over the motor vehicle problem. No remark is more common among the hundreds of constructors who devote their time to the automobile motor than this: "The motor is everything; as soon as we have the motor we have the motor vehicle." Consequently they give scant attention to the running gear, but admit that the motor is not yet perfect.

Vehicle Gearing the Vital Thing

The marine motor situation all but proves either that the gasolene motor in any type approaching those at present produced is not adapted for motor vehicles, or that the running gear is the most difficult portion of the problem awaiting solution, so far as gasolene motor vehicles are concerned.

Only the simplest kind of mechanical inquiry is involved in examining this thesis in the light of facts open to everybody. Yet, if confirmed, it should liberate hundreds of brains and hundreds of thousands of dollars from comparatively useless research and experimenting and turn them to more fruitful purposes.

Marine and Vehicle Motors Differ

Everybody is ready to admit that the marine motor works under favorable conditions, and too ready to infer that for this reason it may be made simpler in construction than the automobile motor. The only valid reasons that might be given for this line of thought lie in the greater weight that is permissible in a boat, as compared with a vehicle, which makes a larger flywheel available, the constant renewal of water for cooling purposes and the absence of odor by exhausting into the water. None of these features has much to do with the special difficulties that beset the application of the motor to vehicles; these are all prin-

cipally dependent upon the fact that the power is positively tied to its work, the motor shaft positively geared to the driving wheel axle, while the speed of the work is not commensurate with the speed of the power. They would not exist in a motor vehicle driven over the bottom of the ocean by a screw propellor, or driven over the road by a fan acting upon the atmosphere.

Speed versus Speed

Aside from the main fact that motor speed and boat speed are disconnected—while connected through the running gear in automobiles—and that the variations in power required for producing a given speed with the same boat and load are smaller than for a vehicle which must negotiate all kinds of roads, the demands upon the power are the same. The motor should, for either class of work, be balanced so as to convert the reciprocating piston motion into torque with a minimum of vibration; as many power repulses per revolution of motor shaft as possible are desirable in the boat as in the vehicle; the motor should be capable of running slow or fast at the option of the operator, and while it is not possible to run a motor that drives a suitable screw propeller slowly with a high development of power—and it is one of the greatest advantages in an automobile motor if it may be so run—the marine motor may be and is made so that it would run slowly, with the power development comparatively high, if a larger propeller were attached so as to create the resistance needed to slow up the motor.

A Tractable Marine Motor

To illustrate the point that the running gear of the vehicle is the only essential feature upon which automobile success depends after a motor has been produced which is fully suitable for marine work, I will mention what one of the marine motors that have come under my observation recently, is capable of doing.

It was, like most modern marine engines, of the two-cycle type and had been running nearly every day for two or three months without giving its owner one un-

easy minute. Though a single-cylinder, four-horse engine vibration was barely noticeable in the motor itself, but a slight trembling of the boat, which was frail, seemed to be communicated from the propellor shaft. Starting with a couple of turns of the flywheel (subsequent starts with half a turn) and ignition set to take place at the dead center, the motor commenced going easily on about half charges of gasoline. By advancing ignition gradually about forty degrees it ran up to a speed of about 300 revolutions. By admitting full charges of gasoline vapor this was increased to 460. By operating the throttle of the vaporizer and the sparker in conjunction, the speed was lowered to twenty-five revolutions and the motor was running with perfect regularity. It was then operated with increasing charges, the sparker retarded variably but always as much as the necessary time for flame propagation would permit, according to the best judgment of the operator; and a speed of about 300, more or less, was again reached. Favorable timing again produced maximum speed. The motor seemed as tame as a kitten and did not show its claws. I have no reason to doubt that it could be run down to thirty or forty revolutions at full development of each explosion if means had been present for loading the motor.

How Improve the Motor?

Now, what more can be expected of a motor run by explosions? What more can the motor-vehicle engineer expect to obtain by his experiments than a motor which performs throughout the range of power and speed as above mentioned, with perfect docility? Considering that it is inconceivable that any gasoline or steam engine should produce as much power at slow motor speed as at high motor speed with the same explosive charge (respectively steam pressure), in what additional way would it be possible for an operator to control his engine were it placed in a motor-vehicle instead of in a boat? He may synchronize the throttle operations with the timing of the spark, by means of a lever operating both in conjunction, but this would reduce his range of control somewhat, while un-

doubtedly otherwise desirable for the sake of convenience; but he cannot expect to accomplish more with reference to the motor part of his problem than to control it perfectly in all the manifesta-

tions of power and motor speed of which a motor of its class is inherently capable.

The rest of his problem pertains to the running gear.

AUTOCAR CO.'S GASOLENE VEHICLE

The accompanying illustration shows the complete running gear of the standard runabout of the Autocar Co., of Ardmore, Pa. The company have spent a long time in experimenting on gasolene vehicles and have not offered anything to the public until they should be sure that they were able to produce an entirely satisfactory vehicle, although not hampered by any of the commercial troubles that have delayed others who have spent a long time in getting their vehicles on the market. The company gives the following particulars:

The motor is of the balanced type, having two cylinders, with the crank shaft at 180 degrees. By this construction all reciprocating parts are absolutely balanced and there is no vibration whatever in the vehicle. The running gear is made up entirely of steel tubing, of heavy gauge, and the joints are all brazed. The compensating gear, which is situated on the rear axle, is all encased, dust-proof, and runs in a bath of oil. The wheels are of the steel spoke, tangent, laced type and run on ball bearings. The tires are 2½ inches in diameter, single tube, and are of such a thickness on the tread that, with ordinary usage, they should last at least two years.

One of the main features of this vehicle is that the motor and all parts necessary to operate the vehicle are mounted on a frame, this frame being mounted on the springs in such a way that the machinery, as well as the occupant, is relieved of all shocks from the road.

The water, which is used for cooling the motor, is circulated through a radiating coil, which is a very ingenious device, and by this means three gallons of water

is sufficient to run the vehicle almost indefinitely without replenishing. The copper water can, which is located at the rear of the carriage, has a capacity of three gallons, this quantity being sufficient under all ordinary circumstances. The motor will develop by brake test 5½ horsepower. The company, however, only claims 5-horsepower for it.

Numerous tests have been made in the vicinity of Philadelphia with this particular wagon, and as a hill climber it has never failed. In fact, the company have found no hills within a radius of ten miles of the factory upon which the vehicle will not run at a speed averaging ten miles an hour. The motor is of the Otto-cycle type, receiving an explosion every other revolution. The valves, cylinder and head are all water jacketed, and, by a small lever which is attached to the controlling handle, the speed of the motor can be varied from 240 revolutions to 1,000 revolutions per minute. The transmission of power from the engine shaft to the rear axle of the vehicle is made by means of chain and sprocket, a small counter shaft with one gear being employed to transmit this power.

The lever, which is located on one side of the seat, controls the entire mechanism of the motor. A slight forward motion of this lever causes the vehicle to move slightly in a forward direction; by increasing the forward motion of this lever, the speed of the vehicle is increased, while a backward motion of the lever causes the vehicle to reverse or go backward. Therefore, it will be seen that with the one lever the complete control of the vehicle is in hand. The front wheels of the carriage are so arranged

that in turning corners there is absolutely no slip of the outer wheel. The rear springs are so arranged that the chain tightener is embodied in them.

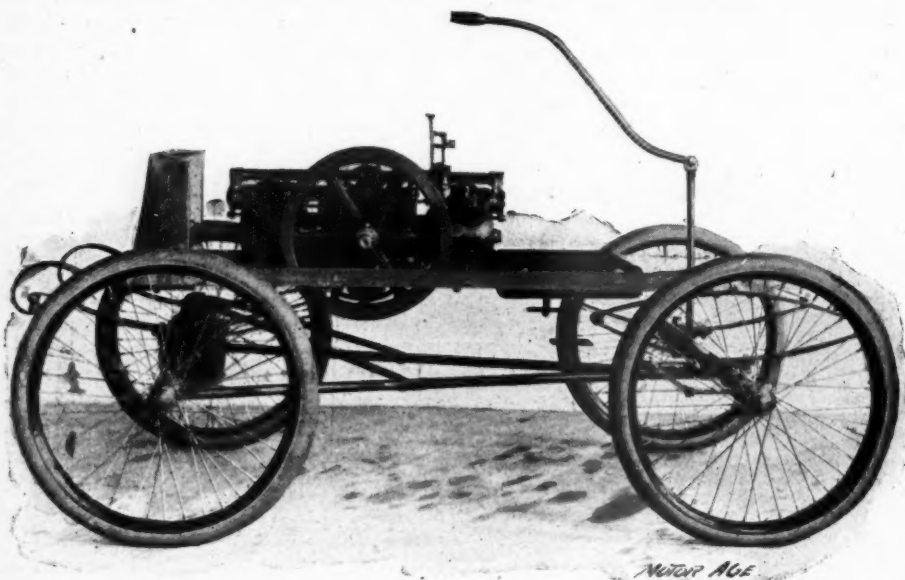
The body of this vehicle is amply large to carry two people very comfortably, the clearance in the seat measuring about 36 or 38 inches. The bodies are furnished with a stick seat for summer use, and by simply removing this seat, a panel seat, with top or storm apron and other necessary attachments, can be furnished at very small cost.

The company are making every piece

of the engine is sufficient to start the engine. All that is left for the operator to do is to remove the crank, mount the seat of the vehicle and remove the lever, which is on the left-hand of the seat, slightly forward, and the vehicle is in operation.

All details as to workmanship and material have been carefully considered, and the company says that they are satisfied that no better vehicle is built in the United States today for ordinary use.

The weight of the wagon, complete, with water, gasoline and all accessories necessary, for a run of sixty-five to sev-



RUNNING GEAR AND MOTOR OF THE AUTOCAR CO.'S GASOLENE VEHICLE.

of the vehicle interchangeable, so that any parts wearing out can be replaced instantly at very small cost. Several types of bodies will be made to suit this standard running gear, so that the purchaser may have an option in purchasing these carriages in this respect.

A can containing $2\frac{1}{2}$ gallons of gasoline is sufficient to drive the vehicle sixty-five miles. All lubrication, with the exception of the cylinders, is automatic. The gasoline vaporizer is also automatic.

To start this vehicle, all that is necessary is to turn on the gasoline, and also throw in a small switch, which is connected with a few dry cells for sparking. One turn of the crank on the main shaft

entire miles, is 725 pounds. Extra gasoline can be carried comfortably for a tour of 400 or 500 miles. These cans, however, are an extra and will be charged for in proportion to the sizes ordered.

The company are so rushed with orders at the present time that they can hardly consider any further orders until after November. Space has been secured at the Madison Square Garden Automobile Exhibition, November 3 to 10, and at that time the company will have four or five of their vehicles, with all the latest improvements, on exhibition.

Visitors are welcome at the factory of the Autocar Co., which is at Ardmore, just a few miles out of Philadelphia,

where the company will be pleased to show the good points of the vehicle.

A policy has been adopted entirely foreign to any other heretofore on the market. The vehicles are sold entirely on their merits and no cash bonus is asked in placing orders. Further than this, an actual brake test is furnished with each motor, and the company guarantees all workmanship and material, as well as the power of the vehicle. Any defective pieces which are found in the vehicles will be replaced, within one year's time, at no cost whatever to the purchaser. Furthermore, the company enjoys a thoroughly

competent mechanic, who will visit the various cities in which their vehicles are located and keep them in repair, answer all questions and make any necessary demonstrations for the benefit of their customers. Therefore, it will be seen that a customer placing an order with this company has absolutely no risk to run as to the success of the vehicle. The company will sell the complete vehicle only, and the list prices are \$800 for the standard runabout pattern and \$875 for the No. 2 style, which is fitted with a Goddard top, panel seat, and upholstered throughout in the best material.

NEWS OF THE MOTOR INDUSTRY

RE THE MOTOR AGE MOTOR

Editor The Motor Age:

I wish to make an inquiry concerning the article on "The Construction of a Gasolene Motor." My object is not criticism but to elicit correct information.

The carbureter, page 70, September 29 issue, seems well designed except in one respect. The globe valve, on the left, for the admission of air through the check valve seems to be the only chance for the admission of air, and its position would determine wholly the amount of air admitted to the cylinder, or, in other words, if not wide open, would throttle the engine and reduce the speed, making the regulating butterfly valve superfluous, leaving the regulating of the mixture almost entirely to the needle valve. If there is an opening other than through the check and globe valves for the admission of air, the diagram does not show it nor the text explain it.—George W. Taylor, Azusa, Cal.

The carbureter described is similar in principle to a number of others in successful use and has proven itself effective. The check and globe valves control the only passage for the admission of air. The check valve is solely for the

purpose of preventing the escape of gasolene vapor with its attendant disagreeable smell. The operation of the carbureter is as follows: The valves are set in the manner described on page 73. In this position the proportion of gasolene vapor and air is about one to six. No further change is needed in the globe valve except to provide for atmospheric changes which may require a greater or less amount of air to the fixed amount of gasolene.

Necessarily there is a partial vacuum formed at every admission stroke of the motor, and this suction assists the liquid gasolene to pass through the needle valve. Once the globe and needle valves are properly set, the explosive mixture will be found to give the greatest power per impulse. A mixture of this proportion, however, fires more slowly than a mixture that is not nearly so rich in gasolene, and consequently the rich mixture does not give so great a motor speed as a weaker one. Then the butterfly valve can be partially closed. The result is that there is not as great a tendency towards a vacuum in the carbureter, less gasolene passes through the needle valve and the mixture is consequently weaker. This weaker mixtures ignites more rapidly and the result is a higher motor

speed. Of course, the butterfly valve can be so nearly closed that it will not admit anything like a full charge to the cylinders and the speed of the motor will be reduced. It is not contemplated, however, that this valve should be closed that much.—Ed.

TROUBLE IN WASHINGTON

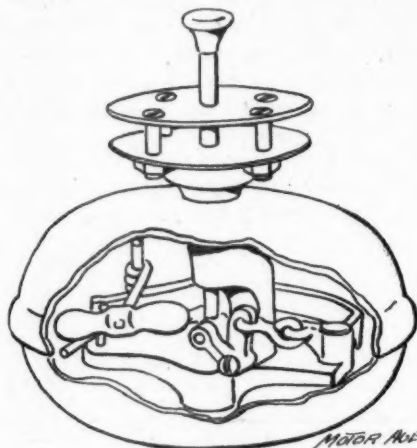
Washington, D. C., Oct. 1.—The autocarett service recently established here by the American Autocarett Co., has been suspended for the present. The suspension was due to the failure of the motors, with which the vehicles were equipped, to work properly. The vehicles which the company had in operation were put in service largely as an experiment, and while they proved that some radical changes were needed, not only for the proper propulsion of the vehicles, but also to obviate the noise they made, the officials state that the experiment has not only shown the defects, but has indicated how they may be remedied, and that this will be done. Financially the experimental trips of the vehicles were a success.

It is the intention of the company to start the service again within the next two weeks, when a number of additional vehicles of improved type will be operated. An order has been given to the manufacturers for forty of the improved coaches. The motors and batteries will be changed in form and will be lighter, and the noise of their operation, it is promised, will not exceed that made by a light automobile. The company is also experimenting with different types of rubber tires, with a view to equipping the vehicles with the most improved type of tire.

HARTFORD AUTOMOBILE BELLS

The illustration herewith shows the interior mechanism of the recently introduced double stroke automobile bell or gong, manufactured by the Cycle Supply Co., of Hartford, Conn. The mechanism is not only simple, but it is said, is positive and reliable in its operation. The gongs are made of a special bell metal and have a distinctive clearness and

richness of tone. The Hartford company states that several of the largest automobile manufacturers in the country have adopted these bells as the regular equipment on their machines. The recently issued descriptive circular relative to the



Hartford Double Stroke Bell.

bells also shows another pattern having what is commonly known as the electric stroke mechanism. Both styles of bells are made and finished in the first class manner characteristic of this company's products.

NEW YORK PALACE SHOW BOOMING

New York, Oct. 1.—Marcus Nathan, promoter of the automobile show to be held at Grand Central Palace, November 10 to 24, is very much in earnest in this latest trade exposition enterprise of his. His hustling and well-directed efforts since his first announcement of his purpose at the time of the last cycle and automobile show at the Garden last winter have produced results that justify him in prophesying a great success.

The Palace contains far greater exhibition space than does Madison Square Garden and Mr. Nathan claims that a canvass of eight months has secured for his show an amount of space already sold in excess of the entire available exhibition space at the Garden.

It is a well known fact that Madison Square Garden has not been able to begin to furnish space for all desiring to

exhibit. Mr. Nathan naturally has secured this overflow and can look for many exhibitors from there who have entered the trade since the Garden show was projected.

Mr. Nathan is no novice in trade shows. It was he who promoted the successful electrical shows for three years and the Printing Exposition last year at the Palace. This is a guarantee in itself of satisfactory management that gives weight to whatever promises or statements he may make.

Horse show week comes during the Palace show, and among the 50,000 visitors to it will be a large proportion interested in motor vehicles. Grand Central Palace has always been a great trade center and exchange for merchants and manufacturers. So it is that the trade and the public are both sure to be interested in a practical way and to a large extent in the Grand Central Palace show.

"AUTOCRAT" MOTOR BICYCLES

The E. R. Thomas Motor Co. of Buffalo, N. Y., is ready to supply the trade with a large line of motors, parts and fittings for motorcycle construction.

The Thomas motor is made in three sizes, as follows: One and one-half indicated horsepower, for bicycles; height, 12 inches; width of crank case, 2 $\frac{7}{8}$ inches, and weight, twenty pounds. Two

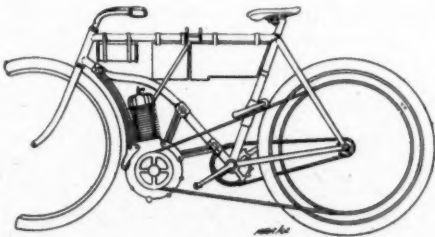


Fig. 1.

and one-fourth indicated horsepower; height, 18 inches; width of crank case, 3 $\frac{1}{4}$ inches; weight, fifty pounds. Three indicated horsepower; height, 18 $\frac{1}{2}$ inches; width of crank case, 3 $\frac{3}{4}$ inches; weight, fifty-six pounds.

The crank cases are said to be of a

special aluminum alloy. They are split vertically and are very carefully and thoroughly bolted together to insure accuracy of bearings and to be practically oil and dust proof. The spur gears are protected by a tightly fitting aluminum case and a packing ring makes the bearings sufficiently tight to allow the gears to be run in oil. The carbureter is larger than usual, in order that it may carry

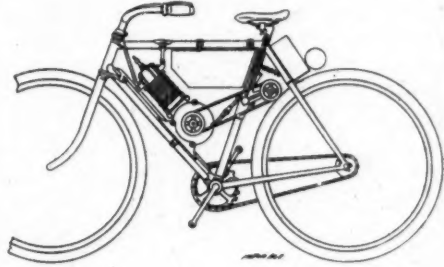


Fig. 2.

a sufficient supply of gasoline for ordinary journeys without the use of the supply tank. The openings are large and are not easily clogged. It is stated by the makers that the mixing occurs without difficulty under all conditions of temperature and humidity.

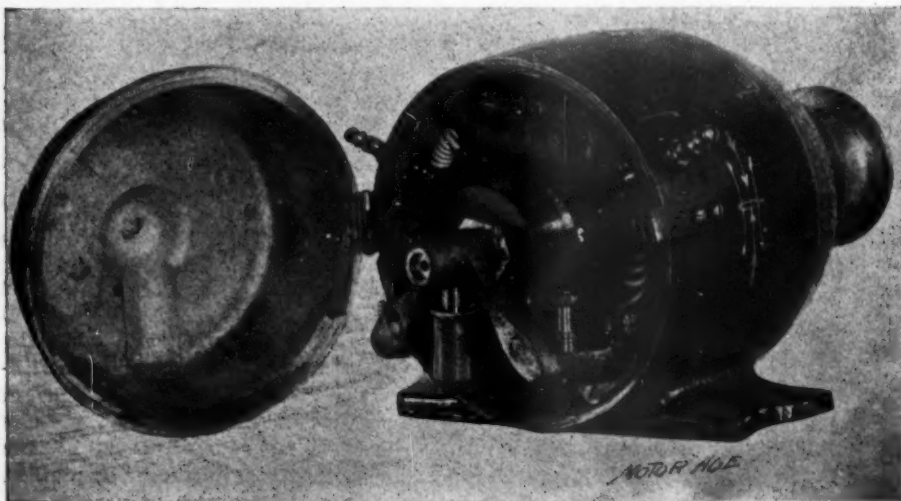
Aluminum is also employed in the construction of the silencer or muffler, which is four-chambered, of neat design, and of which the company is particularly proud, it being averred that it is truly a muffler which muffles. The ignition outfit comprises dry battery, induction coil and a sparking plug of special construction which is said to be proof against short circuiting. The steel core, which extends the entire length of the plug, is fastened with a screw thread, and is detachable. The vibrator of the spark controller is actuated by a spring which is backed up for a portion of its length with solid metal, thus being relieved of strain at the flexible portion. Claims for this device include the item of non-fouling, positive action.

The accompanying illustration presents two designs of motor bicycles which have been produced by the Thomas company. In Fig. 1 is shown a curved motor frame which in building may be substi-

tuted for the lower reach tube of a regular bicycle frame. The motor is suspended as far forward as possible in order to distribute the weight upon both wheels. By using heavy gauge tubing stock, the company affirms, regular bicycle frame fittings may be made up into a complete motor bicycle frame. The motor and motor frame will be sold complete to manufacturers who wish to build motorcycles.

The company's method of attaching a motor to an unaltered bicycle frame is

Dayton Electrical Mfg. Co. of Dayton, Ohio. This igniter has been described at length in the columns of the Motor Age and the external appearance shown. The present illustration shows plainly the internal mechanism. The dynamo is made in several styles to suit different sizes and types of engines, stationary, marine, and automobile. It is constructed so that it can be used without the use of batteries, but the Dayton company recommends the use of its "starting cabinet," by means of which all possible



APPLE IGNITING DYNAMO—SHOWING MECHANISM.

shown in Fig. 2. A bed plate of patented design is secured to the lower reach tube and supports the motor rigidly. This bed plate extends the entire length of the lower reach. The lower extremity rests in the angle between the crank yoke lugs and is held in place by a clamp encircling the seat mast. The upper extremity is clamped to the steering head, while a third clamp further secures the bed plate by bracing it upon the reach tube. The position of the motor is shown in the figure. This attachment may be fitted to any frame 22 inches or more high.

APPLE IGNITING DYNAMO

The accompanying illustration shows the Apple igniting dynamo, made by the

trouble in starting is avoided and reserve power is always on hand in case of any accident to the dynamo.

PHILADELPHIA TRADE NEWS

Philadelphia, Oct. 1.—The local establishment of the Mobile Co. of America, at Juniper and Filbert Streets, had a narrow escape from being wiped off the map last week. In filling the fuel tanks of two of the vehicles a quantity of gasoline was spilled on the floor. In some manner a lighted match or a spark from a cigar ignited the fluid, the flames taking hold immediately on a small quantity of rubbish near by. Prompt work by Manager McCurdy, with some little assistance from the Fire Department subdued the blaze before much damage was done. The

vehicles nearest the flames were blistered somewhat, and will have to be repainted.

W. E. Roach, local agent of the Waverly electric and Canda quadricycles, made a trip from Rahway, N. J., to this city last week in six and a half hours, and took things easy all the way. His vehicle was one of the latter machines, and he says that for comfort the little four-wheeler can hardly be surpassed.

ANGLO-AMERICAN HISTORY

New York, Oct. 1.—A former insider—now, be it said in all fairness, seemingly far from friendly to the powers that were—had a rather interesting tale to tell the Motor Age representative to-day of the history of the formation and downfall of the old Anglo-American Rapid Vehicle Co., which the Motor Age treated with undisguised skepticism at the start, and whose doings it fearlessly set forth as events progressed to the final pricking of the big bubble.

The company was incorporated by H. B. Twyford, Ernest Martin and James Virden, at Dover, Del., November 4, 1899, with a capital of \$75,000,000. Francis D. Carley, now a fugitive and said to be in New Jersey, and W. W. Gibbs, of Philadelphia, were the main backers and promoters. Of the two, Mr. Gibbs was the "angel," though Mr. Carley spent some money. Mr. Gibbs paid \$15,000 in incorporation fees for this enormous capitalization. The foundation of the company was the Pennington and Lawson patents, for which somewhere between \$150,000 and \$200,000 were paid the patent owners, very nearly equally distributed between the two.

It is a fact, goes the story, that there was a restriction of two years in stock transfer, and that to this end the stock was placed in the hands of trustees.

The company soon divided itself into two factions, the Americans upholding Pennington's ideas and the Englishmen Lawson's. It was the intention to have the parts made in different factories and assembled in a central one. To this end fifty sets of parts of some seventy-seven pieces were ordered.

The much-boomed "torpedo" cars were actually built by the Garvin Machine Co., but the orders were taken only on the basis of personal orders from Messrs. Carley and Gibbs, and were paid for. The three "torpedos" turned out are now in England. Nothing ever accrued to the company from the sale of vehicles.

Office, official and clerical expenses were on the most extravagant scales. Jarrett and Wridgway, the motocyclists, were retained at big salaries, and \$5,000 per year seemed to be the standard salary for those holding positions above merely clerical.

The end came through two Philadelphians, who had loaned \$50,000, foreclosing and securing the patents. These finally came into the possession of E. C. Stearns, and are now owned by the Stearns Automobile Co. of Syracuse, N. Y.

Mr. Gibbs was a firm believer in the patents and organized the company and advanced the money in good faith.

NO CHANCE IN HONG KONG

Although the export end of the American motor-vehicle industry is yet practically undeveloped it is well that our automobile manufacturers know beforehand that there is absolutely no chance for them in Hong Kong or southern China. The knowledge may save them useless expense in the future. In the locality of the famous Oriental seaport there is not the slightest use for carriages of any kind or other vehicles other than those propelled by hard working humanity. According to Consul-General Wildman, Hong Kong is situated on a rocky island and rises, terrace by terrace, from the water's edge 1,900 feet in the air to the peak. On the island itself there is one short drive possible, and the colony has the proud distinction of possessing three bona fide carriages which are seen usually on ceremonial occasions. All the drayage of the city is either done on the shoulders of coolies or by means of roughly made hand carts. The means of locomotion for the residents is principally the sedan chair, although a number of rickshaws run on

the lower levels. There is a possible sale for a number of racing saddles and riding saddles, as the city boasts a few China ponies that are used for polo or scratch races.

As to the neighboring Chinese provinces, they are out of the question, as they possess no roads, and probably will not for the next decade.

The consul adds that he trusts a knowledge of the situation will tend to turn the attention of American vehicle manufacturers to other fields where the rewards are greater and more quickly realized.

CLEVELAND TRADE NEWS

Cleveland, Oct. 1.—Several important changes are about to take place in Cleveland retail circles, of interest to both the bicycle and automobile trades; in fact the two are becoming so closely allied as to be almost inseparable.

Perhaps of greatest importance is the transfer of the automobile business of Collister & Sayle, who were the first to offer the up-to-date means of transportation in a retail way in this city, to the Cleveland Automobile & Supply Co., incorporated recently with \$25,000 capital stock by George Collister, president; Walter Crawford, vice-president; W. M. Wright, secretary, and W. F. Sayle, treasurer. These gentlemen, with George Pettingill, constitute the board of directors. Believing that the automobile trade is about to develop into a large business that will require the undivided attention of skilled men with a floor space unavailable in their present quarters, the local firm organized the new company and are preparing to open a fine store at 146 Prospect Street. In addition to the large retail store there is a building in the rear which will be utilized as a repair shop and storage room. It is the intention to buy and sell second-hand vehicles as well as new ones; also to repair and rent. Purchasers or those desiring to rent machines will be given instructions by competent men. The agency for the Locomobile steam line of vehicles has been secured and these will be handled in addition to the Waverley electric and Elmore hydrocarbon ve-

hicles now sold by Collister & Sayle. Other types of vehicles and probably motor cycles will also be handled. Walter Crawford who has been the practical man for Collister & Sayle will have charge of the selling, while W. M. Wright will also be in attendance. The company has the territory of Northeastern Ohio for the Locomobile and will establish agencies.

The Lozier retail store of the bicycle trust, for years the leading establishment in the city, is seeing its last days and will be succeeded very shortly by the Cleveland Wheel Co., composed of the Diebold brothers of Canton, Ohio, for several years agents for the Cleveland wheel in that city. The firm will occupy the store now occupied by the Hoffman Bicycle Co.'s retail establishment at 287 Erie Street, and in addition to the Cleveland wheel, the Cleveland motor tricycles and the Lozier steam wagon now being built at Toledo, will be handled. Harry Stohl, at present bookkeeper for the Lozier retail store, will go with the new firm. H. S. Covey, for a number of years the Lozier retail manager, is to go on the road for the Lozier sales department.

GERMAN TRADE NOTES

Berlin, Sept. 14.—The Berlin "Electromobil & Accumulatoren, Werke Fiedler & Co." have declared their insolvency.

A motor car of French design coming from a Basle factory, with Strassburg as its destination, was confiscated on the German frontier, as the firm had paid no custom taxes on it. The Basle firm was politely demanded to remit 750 marks duty and fine, a distraint being levied on a second car till the money was forthcoming. The vehicle smuggled into Germany is to be sold by the customs authorities, who did a good stroke of business when they discovered the evasion of their regulations.

His Excellency General von Trietschke, commander of the XIX (2nd Royal Saxon) Army Corps, and Dr. Tronollin, Chief Burgomaster of the city of Leipzig, have accepted the honorary presidency of the Motor-Car Exhibition, to be held at Leip-

zig in connection with the cycle show from October 19 to 23. An honorary committee has been formed besides, consisting of twenty-one of Liepzig's most prominent citizens.

Duke Victor, of Ratibor, presented the committee of the Berlin Aix la Chapelle race with four handsome gold medals, to the awarded to the firms whose cars came out of the contest with blowing colors. The medals were given to the firms of Cudell, Dietrich, Durkopp and Fahrzeugfabrik Eisenach.

The Frankfort Automobile Show has resulted in a net profit of 11,000 marks, only 5,000 less than Berlin's exhibition last year and comparatively a better result for Frankfort. The money goes, as previously arranged, to the Frankfort Automobile Club, which will not regard this considerable addition to the club funds ungraciously. The catalogue alone gave a profit of \$1,000, and these most favorable financial conditions are due to the ceaseless toil of the secretary, Herr Willer Herfurth, and the treasurer, Herr Wilhelm Opel.

The Eisenach Wartbury cars have again proved themselves equal to all demands and exigencies. Monsieur Ravenne, of Paris, accompanied by a moniteur, left the French metropolis on a recent Monday for Eisenach, where he arrived on the following Wednesday, having covered the whole distance in barely three days. The car was five-horsepower and ran extremely well.

NEEDED MORE ROOM

Cleveland, Oct. 1.—Cleveland's first automobile retail establishment has already found it necessary to seek larger quarters. Frank Lampkin, agent for the Mobile steam vehicle, has removed from 238 Euclid to a larger store at 254 Euclid Avenue. He found it desirable to carry a large stock of vehicles on hand in order to make immediate deliveries, and is now showing a line of ten Mobiles in different styles and finishes.

BRIEF NEWS OF THE INDUSTRY

It is reported that Charles E. Duryea will return to his home at Peoria, Ill., to

engage in the manufacture of motor-vehicles at that place.

The Columbia Automobile Co., of Columbia, S. C., has been incorporated.

It is reported that 179 employees of the Riker plant at Elizabethport, N. J., have been laid off.

The Maryland Automobile Mfg. Co. is reported to have completed the erection of a factory at Westernport, Md.

The Indianapolis Light & Power Co. is considering plans for charging automobile batteries by placing charging posts at some of the street corners of the Indiana metropolis.

The Siemens & Halske plant, near Chicago, has been closed. The automobile work which was being done there will be completed at the Terre Haute, Ind., plant of the General Electric Co.

Notice has been given of a meeting of the Union Motor Truck Co., of Philadelphia—a West Virginia corporation—for the purpose of increasing the capital stock from \$500 to \$3,000,000, of which \$600,000 is to be six percent preferred stock.

The Duryea family is prolific of automobile experts. The oldest brother, Charles E., was one of the first to figure prominently as a motor-vehicle constructor. Then came the second, J. Frank, who is the patentee of a number of motor-vehicle inventions, and now comes the youngest brother, Otho, who is reported to have built an automobile at Los Angeles, Cal.

MISCELLANEOUS

Advertisements under this head 5 cents per word, cash with order. Express orders, post office orders, or postage stamps accepted.

FOR SALE

THREE Bargains—1 new Duryea Phaeton, \$1,400; 1 Winton Phaeton, '99 model, \$750; 1 Duryea Light Delivery Wagon, little used \$750. Trials given. HENRY CROWTHER, 20 Broad Street, New York City.

FOR SALE—Winton automobile, 1899 pattern; newly renovated; looks as good as new. Address P. O. Box 548, Philadelphia, Pa.

FOR SALE—1900 Winton Special; all latest improvements, nearly new; splendid condition. Address E. M. R., 807 N. 24th St., Philadelphia, Pa.

FOR SALE—The Automobile Storage and Repair Co., 57 West 66th St., New York, have new and second-hand steam, gasoline, and electric carriages constantly on hand and have always some special bargains.

THE
CONSTRUCTION
OF A
Gasolene Motor

FOR
AUTOMOBILE USE

BY L. ELLIOTT BROOKES.

Published by THE MOTOR AGE, 324 Dearborn St.,
Chicago, and 150 Nassau St., New York City.

Price, in Paper Covers, \$1.00
To Yearly Subscribers to The Motor Age, 50c.

This book is the reproduction of a series of articles now running in The Motor Age, giving a complete description of how to build a four-horsepower, two-cylinder, balanced gasolene motor for use in automobiles, and includes

COMPLETE WORKING DRAWINGS.

The demand for back numbers of The Motor Age containing the earlier articles of the series has been so great as to have already exhausted the reserve copies, hence the publication in book form. There has also been a sufficient number of inquiries for

BLUE PRINTS

That such have been prepared—full size, of course—and are now on sale. The price, including a copy of the book of instructions, is \$7.50.

Arrangements are being made with a reliable foundry to furnish complete sets of castings of the motor, either in the rough or partially finished. Further announcement will be made on this score.

SPOKES FOR WIRE WHEELS



ALL SIZES.

Made by the only bicycle spoke manufacturer in the world.

BEST GRADE.

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SIMPLE, RELIABLE and SAFE

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VARIABLE
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380 Washington St., Buffalo, N. Y.

For Motor Vehicles

Dixon's Pure Flake Graphite Lubricants for Engine Cylinders, Chains, Gears, Bearings, etc. Nothing can equal them.

JOSEPH DIXON CRUCIBLE COMPANY
JERSEY CITY, N. J.AUTOMOBILE
WOOD RIMS!

28-inch to 36-inch for 2 inch to 4-inch Tires

FAIRBANKS-BOSTON RIM CO., Bradford, Pa.

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ACME STEEL CASTINGS

Close Grained—Strong—Suitable for
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Will not harden in brazing and welding.

MALLEABLE CASTINGS

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ENGINES, Boilers, Regulators,
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Every day in the week

The Physician is obliged to answer his urgent calls. He must be supplied, therefore, with a perfect Physician's automobile, and it makes it necessary to have one of such design, mechanism and workmanship that it can be depended upon (be the weather what it may) under any and all circumstances. It must be automatic in the regulation of the burners, fuel supply, etc., and must be quick and positive in its action.

The Baldwin (Steam) Automobile
embraces all these points.

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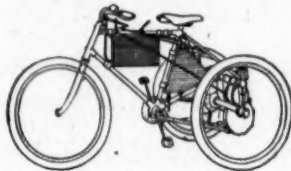
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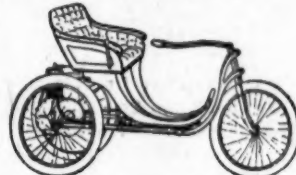
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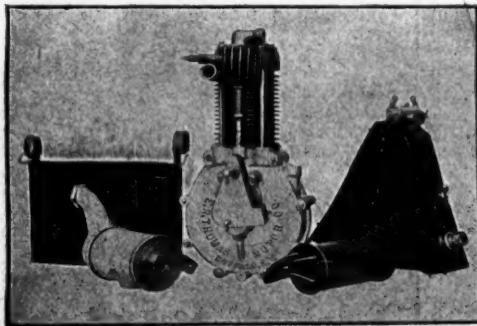
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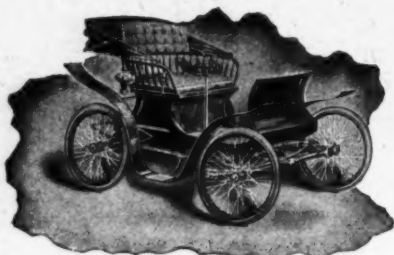
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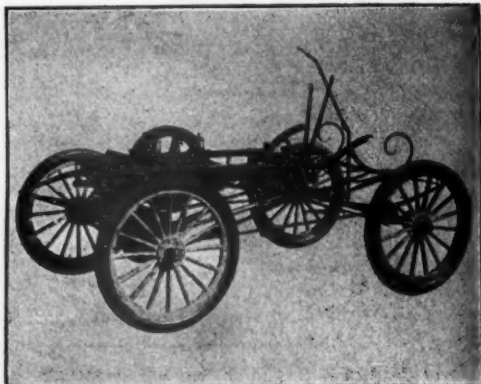
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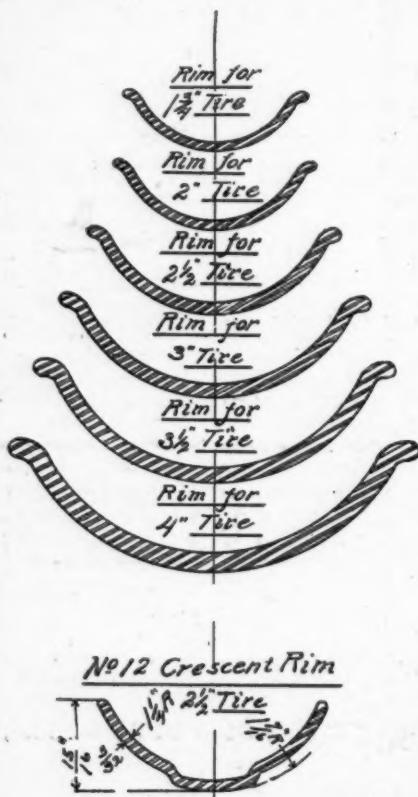
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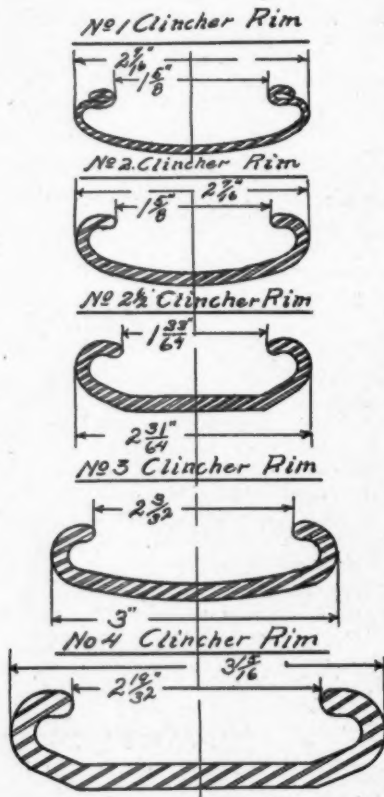
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